

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
13 October 2005 (13.10.2005)

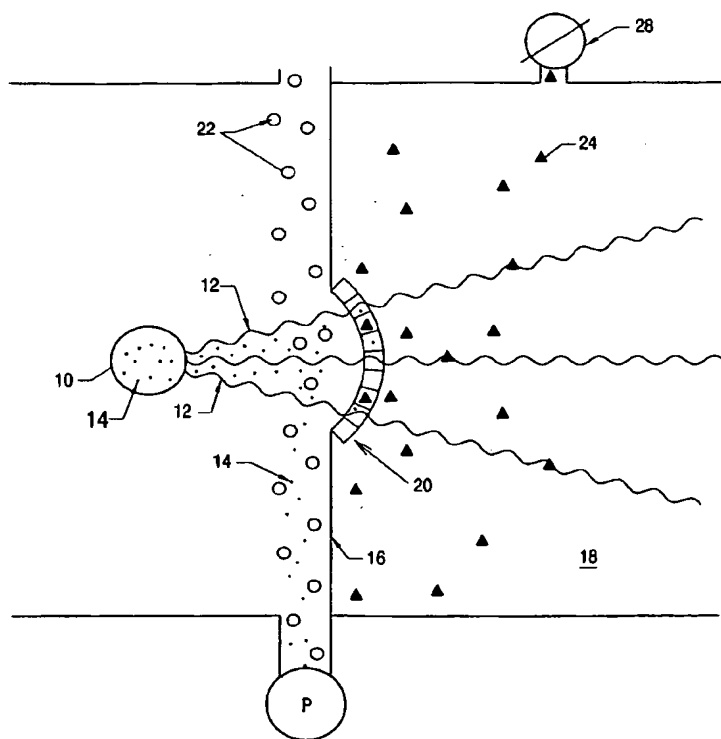
PCT

(10) International Publication Number  
**WO 2005/096099 A2**

- (51) International Patent Classification<sup>7</sup>: **G03F 7/00**
- (21) International Application Number:  
PCT/IB2005/050941
- (22) International Filing Date: 18 March 2005 (18.03.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
04101311.1 31 March 2004 (31.03.2004) EP
- (71) Applicant (for DE only): **PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH** [DE/DE]; Stein-  
damm 94, 20099 Hamburg (DE).
- (71) Applicant (for all designated States except DE, US): **KONINKLIJKE PHILIPS ELECTRONICS N. V.**  
[NL/NL]; Groenewoudscweg 1, NL-5621 BA Eindhoven  
(NL).
- (71) Applicant (for all designated States except US): **ASML NETHERLANDS BV** [NL/NL]; De Run 6501, NL-5504  
DR Veldhoven (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **JONKERS, Jeroen**  
[NL/DE]; c/o Philips Intellectual Property &, Standards  
GmbH, Weissshausstr. 2, 52066 Aachen (DE). **BAKKER,  
Levinus, Pieter** [NL/DE]; c/o Philips Intellectual Prop-  
erty &, Standards GmbH, Weissshausstr. 2, 52066 Aachen  
(DE). **SCHUURMANS, Frank, Jeroen, Pieter** [NL/DE];  
c/o Philips Intellectual Property &, Standards GmbH, Weis-  
shausstr. 2, 52066 Aachen (DE).
- (74) Agent: **VOLMER, Georg**; Philips Intellectual Property  
&, Standards GmbH, Weissshausstr. 2, 52066 Aachen (DE).
- (81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,

[Continued on next page]

(54) Title: METHOD AND DEVICE FOR REMOVING PARTICLES GENERATED BY MEANS OF A RADIATION SOURCE DURING GENERATION OF SHORT-WAVE RADIATION



(57) Abstract: A method for removing contaminant particles (14), such as atoms, molecules, clusters, ions, and the like, produced by means of a radiation source (10) during generation of short-wave radiation (12) having a wavelength of up to approximately 20 nm, by means of a first gas (22) guided at high mass throughput between the radiation source (10) and a particle trap (20) arranged in a wall (16) of a mirror chamber (18) is described that can be used for a lithography device or a microscope. In order to protect an optical device and/or articles to be irradiated against contamination, the method is designed such that a second gas (24) is introduced into the mirror chamber (18) and its pressure is adjusted such that it is at least as high as the pressure of the first gas (22).



GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— without international search report and to be republished upon receipt of that report

(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.